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Migration Circumstances, Psychological Distress, and Self-Rated Physical Health for Latino Immigrants in the United States

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Abstract

Objectives—We determined the impact of premigration circumstances on postmigration psychological distress and self-rated physical health among Latino immigrants.

Methods—We estimated ordinary least squares and logistic regression models for Latino immigrants in the 2002/2003 National Latino and Asian American Study (n|=|1603).

Results—Mean psychological distress scores (range|=|10–50) were 14.8 for women and 12.7 for men; 35% of women and 27% of men reported fair or poor physical health. A third of the sample reported having to migrate; up to 46% reported unplanned migration. In multivariate analyses, immigration-related stress was significantly associated with psychological distress, but not with self-rated health, for both Latino men and women. Having to migrate was associated with increased psychological distress for Puerto Rican and Cuban women respondents and with poorer physical health for Puerto Rican migrant men. Unplanned migration was significantly associated with poorer physical health for all Latina women respondents.

Conclusions—The context of both pre- and postmigration has an impact on immigrant health. Those involved in public health research, policy, and practice should consider variation in immigrant health by migration circumstances, including the context of exit and other immigration-related stressors.

Theories of acculturation, defined as “the acquisition of the cultural elements of the dominant society,”[1, p.369] and consequent changes in health dominate Latino immigrant health research.[2–4] Acculturation studies highlight important aspects of how individuals make meaning of their life experiences, including health experiences, through language, cultural norms, and values.[5] In addition, studies of Latino mental health have demonstrated the influence of cultural change within immigrant families; uneven levels of acculturation

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Contributors

J.|M. Torres and S.|P. Wallace conceptualized the study and analysis plan, interpreted findings, and revised manuscript drafts. J.|M. Torres managed and analyzed the data and drafted the manuscript.

Human Participant Protection

This study is a secondary analysis of public-use, de-identified data from the National Latino and Asian American Study (NLAAS) and was exempt from institutional review board approval. The original NLAAS was approved by institutional review boards at Cambridge Health Alliance, the University of Washington, and the University of Michigan.

within families can lead to family cultural conflict, which may have adverse mental health impacts.[6,7]

Nevertheless, the focus on cultural determinants of health (i.e., acculturation) often comes at the expense of other factors related to migration, including social, political, and economic adversity in both places of origin and the United States.[8–12] A particularly understudied set of influences on Latino immigrant health relates to the circumstances of departure, including whether individuals had to migrate because of political conflict, dire economic conditions, or other pressures.[13] Exposure to such conditions in one's place of origin may have lingering affects on mental health.[14,15] The degree to which migration is planned might also have a long-term impact on health; unplanned migration may lead to a more sudden rupture of the social networks that support both psychological and physical well-being.[16–19] Acculturation-focused studies typically do not consider the influence of migration or country-of-origin context on immigrant health, given that the frame of reference for acculturation is US society.[11]

Stressors related to the conditions of migration include a set of social and structural inequities that immigrants may experience upon arriving and settling in the United States. These include unfair treatment due to legal status, nativity status, and accent, as well as unequal access to social benefits, such as health care.[20–24] These forms of discrimination are often subsumed in the immigrant health literature within the construct of "acculturative stress,"[25] suggesting erroneously that they can be attributed to an individual's level of acculturation. More accurately, however, these stressors relate to the diverse social, political, and economic climates in receiving communities and not necessarily to whether immigrants have "acculturated."[8] For example, immigrants who are proficient in English may continue to experience discrimination based on their legal status.[26] We therefore prefer the more expansive term "immigration-related stress" instead of "acculturative stress," which is conceptually limited to the challenges involved with cultural change, including language learning and retention.[27] Immigration-related stressors may comprise discrimination, including legal status discrimination, and may also refer to the challenges of familial cross-border separation, which does not necessarily relate to level of acculturation.[28] Immigration-related stress has been shown to be associated with adverse health outcomes for specific Latino subgroups,[3,29] but it has received less attention in national studies.

We tested the relationship of migration circumstances to both psychological distress and self-rated physical health for a national sample of Latino immigrants in the United States. We hypothesized that stressful conditions leading to migration, as well as adverse experiences of arrival and settlement, would be associated with higher levels of psychological distress and poorer overall physical health. We expected that the relationships between premigration circumstances and health outcomes would be moderated by Latino subgroup, given that migration experiences vary greatly among Latino groups, which include peoples from distinct social, cultural, political, and economic contexts.[30,31] For example, Puerto Rican–born migrants are US citizens and therefore have different conditions of migration than those migrating without legal documents or who have to navigate the immigration system for legal entry.[32] In addition, some Latin American immigrants have faced distinct migration circumstances because of the political context in

both their countries of origin and the United States. For example, early waves of Cuban migrants received refugee status and resettlement assistance,[18] whereas the majority of those fleeing civil wars in Central America were never granted refugee status, limiting their access to benefits.[30,33,34] For some Latino subgroups, such as Cubans and many Central and South Americans, unplanned or involuntary migration might refer more to political reasons for migration, or a combination of political and economic motivations,[18] whereas for other groups (e.g., Puerto Ricans or Mexicans), identifying migration as involuntary or unplanned might refer more to dire economic circumstances or family obligations that motivated migration.[32] We therefore hypothesized that circumstances of migration would be more strongly associated with poor health outcomes for Cubans and many other Latinos, given that many of these groups were motivated to migrate, at least in part, by political circumstances such as civil war or political persecution.

We also hypothesized that migration circumstances would be related to psychological distress and physical health above and beyond measures of individual- and family-level acculturation. This reflects our argument that structural contexts can cause stress for Latino immigrants in both places of origin and of settlement.

Finally, we expected to find different patterns in the association between migration circumstances and health outcomes by gender. In part, we expected that women would report higher levels of psychological distress than men, although there may be fewer differences in physical health outcomes. Men and women experience different migration circumstances, with significant variation by ethno-national subgroup.[32–35] For example, Mexican women have historically been more likely to join family members already settled in the United States, although they are increasingly initiating migration; many Mexican men established migration networks in the 20th century through labor projects directly targeting male workers.[36, 37] Puerto Rican men were similarly recruited in the early and mid-20th century to work on the US mainland. Women became increasingly incorporated into circular labor migration patterns over the second half of the 20th century, often fulfilling familial and economic obligations in both Puerto Rico and the mainland.[32,38] Central American and Dominican women were historically more likely to initiate migration in their family networks, taking jobs in factories or as domestic workers and facilitating men's migration later on.[33,34] Political refugees, including Cubans and some South Americans, were more likely to migrate as families.[38] Given these differences, the meaning of migration planning and decision-making might vary qualitatively for men and women. This suggests the need for an analysis stratified by gender, although we expected that reporting unplanned migration or having to migrate (vs wanting to migrate) would be associated with poorer health for both men and women.

Researchers have also documented gendered experiences of settlement for immigrants, including lesser access to legal and occupation-related resources for women compared with men,[38,39] and greater continued attachment of women to countries of origin,[40,41] with women more likely to take on caregiving roles both in places of settlement and abroad. These additional disadvantages resulting from stressful migration circumstances for may lead to poorer health outcomes for female migrants than for male migrants, and they provide additional rationale for stratified analyses by gender, although we expected that

immigration-related stressors would be negatively associated with psychological and physical health for both men and women.

METHODS

Data and Measures

We used data from the National Latino and Asian American Study (NLAAS), a nationally representative household sample that surveyed US-born and immigrant Latinos and Asian American adults between May 2002 and November 2003.[42] The NLAAS sampled households from census blocks in metropolitan statistical areas or county units using probability proportionate to size, and from census blocks with a high density of key ethnic groups. Latino sample weights were based on the 2000 US Census, with adjustments for underreporting of undocumented and low-income individuals in the census.[43] Interviews were conducted face to face. NLAAS instruments were available in Spanish and English; translation techniques were used to ensure linguistic and cultural comparability across measures.[44]

The weighted response rate for Latinos was 75%.[42] We limited our analysis to the 1630 Latino immigrant and Puerto Rican-born respondents. We further excluded 28 cases with missing data (1.7% of the sample), for a final sample size of 1602.

Demographic measures included age, gender, marital or cohabitation status, and educational attainment. We measured economic status with a question asking, “In general, do you and your family living here have more money than you need, just enough for your needs, or not enough to meet your needs?” We compared respondents who stated “not enough” with those with just enough or more than enough to meet basic needs. This question addresses conditions of relative material hardship more directly than a measure of income, which does not account for remittances, existing debts, and cost of living for respondents in diverse regions of the United States.[45] Latino subgroups were categorized in the study as Mexican, Puerto Rican, Cuban, and other Latino. We also included US citizenship status as a control.

We included common proxy measures of individual- and family-level acculturation. English language proficiency was a binary variable (i.e., excellent, very good, or good vs fair or poor proficiency). Time in the United States was a binary variable indicating 10 years or less (vs 11 or more years); we tested alternative specifications, including a 4-category measure (0–5, 6–10, 11–20, and 21 years or longer), and obtained similar results. We measured family cultural conflict with a 5-item scale (α|=|0.79) adapted from the Hispanic Stress Inventory[46] that asked respondents about the frequency of stressors related to different values and cultural norms among family members (e.g., “How often do you argue with family over different customs?”). Scores ranged from 0 to 10, with 10 indicating most conflict.

Indicators of migration circumstances included a measure of whether respondents migrated because they “had to” or “wanted to”; this was a personal assessment of migration decision-making rather than a direct indication of forced migration or refugee status. A second variable measured the degree to which respondents planned their migration. We grouped responses of “carefully planned” and “somewhat planned,” compared with migration that

was “not at all planned.” Migration decision-making and migration planning variables were unrelated in χ^2 analysis (Pearson χ^2|=|0.03, p-value:|0.862), suggesting that they each captured distinct aspects of premigration circumstances.

We measured immigration-related stressors by 9 questions also adapted from the “immigration” dimension of the Hispanic Stress Inventory (α|=|0.70).[46] Scale items measuring immigration-related social stressors included whether respondents felt guilty about leaving family and friends in their country of origin and if they found it hard to interact with others because of their limited English-language abilities. We assessed political or legal stressors by 3 questions asking respondents if they had ever been questioned about their legal status, if they feared deportation if they visited a social or government agency, or if they restricted use of health services through fear of deportation. Three measures related to immigration-related discrimination included whether respondents were treated badly because of poor or accented English, whether they received the same respect in the United States as in their country of origin, and whether they had difficulty finding work because of their Latino descent.

The dependent variables included the Kessler 10 scale of nonspecific psychiatric distress, which asks respondents about 10 depressive and anxiety symptoms in the past 30 days (e.g., “How often did you feel depressed?).[47] The five-item responses range from “None of the time” to “All of the time.” Two questions relate to symptom severity for respondents endorsing specific distress symptoms (e.g., “How often were you so depressed that nothing could cheer you up?”). Where no symptoms were reported, we coded the severity scores as “none of the time.” We coded all items such that higher scores indicated greater distress (range|=|10–50 points; α|=|0.94).

For the dependent variable of physical health status, respondents were asked, “Overall, would you say your physical health is excellent, very good, good, fair or poor?” We created a dichotomous variable of “fair” and “poor” vs “excellent,” “very good,” and “good” responses. We tested whether results varied when we controlled for language of interview, given the potential differences in Spanish or English response categories of self-rated health.[48] We found no differences by interview language; given the model fit statistics and our interest in controlling for broader acculturation proxy measures, we preferred to use the measure of English-language proficiency as our language-related covariate.

Analyses

We first calculated variable distributions, stratifying by gender, and tested for differences between men and women by using analysis of variance and χ^2 tests using the Rao-Scott adjustment,[49] as has been done in other analyses of NLAAS data.[50] We conducted both bivariate and multivariate analyses, using linear regression for psychological distress and logistic regression for self-rated physical health status. For each outcome, we first present bivariate regression results; we then include sociodemographic and acculturation variables, followed by the addition of migration circumstance measures; finally, we test interaction terms between premigration measures and Latino subgroup. We assessed model fit with adjusted Wald statistics for both outcome measures. We completed all analyses with

STATA version11 (StataCorp LP, College Station, TX) and made use of the SVY feature to adjust for the complex sampling scheme.

RESULTS

Table 1 presents weighted and unweighted descriptive statistics for all covariates. There were significant differences by gender for both outcome measures. Mean distress (Kessler 10) scores were 12.7 points for men and 14.8 points for women; over one third of women and under one third of men reported fair or poor physical health status. About a third of both men and women reported having to migrate, and 46% of women and 43% of men reported unplanned migration; mean immigration stress scores were 2.5 points for both men and women (range|=|0–9). Some differences were found in frequencies of specific immigration stressors by gender. Over half of women reported difficulty interacting because of limited English compared with 37% of men. In contrast, 34% men reported having been questioned about their legal status compared with 27% of women. Around 10% overall reported avoiding health services through fear of the immigration service, and 14% of women and 18% of men reported fearing deportation if they were to visit a social or government agency.

Psychological Distress

In bivariate analyses (Table 2, model 1), both premigration measures (having to migrate and unplanned migration) were significantly associated with higher levels of psychological distress for women only. In model 2, which controlled only for sociodemographic and acculturation variables, family cultural conflict was positively associated with distress for both men and women, whereas the measures of time in the United States and English-language proficiency were not significant.

Model 3 included the main effect measures of migration circumstances. Only the measure of immigration-related stress was significantly associated with higher levels of psychological distress for both women and men. To test whether premigration circumstances differed in effect by Latino subgroup, we added interaction terms (model 4) and found that reporting having to migrate was significantly associated with higher levels of psychological distress for Cuban women (b|=|1.92, *P*|<|.05) and Puerto Rican women (b|=|4.60, *P*|<|.01) compared with Mexican women who reported that they wanted to migrate (rather than had to migrate), the reference category in the interaction analysis. An adjusted Wald test of the entire interaction term suggested that it added significant information to the model (F|=|3.9, *P*|<|.05), although the overall model fit was slightly weakened through the addition of the nonsignificant interaction terms between unplanned migration and Latina subgroup. No Latino subgroup differences were found for migration circumstances for men.

Self-Rated Physical Health Status

Self-rated physical health (Table 3) showed a different pattern of predictors. In bivariate analyses (model 1), unplanned migration was associated with significantly greater odds of reporting fair or poor physical health status for both women and men. Models 2 through 4 suggested that for women, only the main effects measure of unplanned migration was

significantly associated with greater odds of reporting fair or poor physical health status (model 3; odds ratio [OR]|=|1.61; 95% confidence interval [CI]|=|1.01, 2.59).

Among male respondents, unplanned migration was associated with significantly greater odds of reporting fair or poor physical health status in bivariate analyses (model 1; OR|=|1.79; 95% CI|=|1.19, 2.69), but not when we tested main effects in multivariate analysis (model 3). The overall set of interactions between unplanned migration and Latino subgroup was not significant on the basis of the adjusted Wald test (F|=|2.6, *P*|=|.06). However, the results in model 4 suggest a significant interaction in the effect of having to migrate on physical health status for men (adjusted Wald test, F|=|3.2, *P*|<|.05); Puerto Rican men who reported having to migrate were associated with significantly greater odds of fair or poor physical health status compared with Mexican men who reported wanting to migrate (OR|=|4.49; 95% CI|=|1.53, 13.2). The scale of immigration-related stressors was not significantly associated with self-rated physical health status for either men or women.

DISCUSSION

The results of our analyses suggest some significant relationships between premigration circumstances and postmigration psychological and physical health, with important differences by gender and Latino subgroup. The findings are consistent with our hypotheses that migration circumstances would be significantly related to health outcomes for Latino immigrants and that this would differ both by Latino subgroup and by gender independently of other measures of socioeconomic status and acculturation.

However, the findings provide limited support for our specific hypothesis that potentially stressful circumstances of migration, including having to migrate and unplanned migration, would have a more adverse effect on health for those generally motivated to migrate by political reasons. Specifically, “having to migrate” was associated with worse psychological health for Puerto Rican and Cuban women and worse physical health for Puerto Rican men compared with their Mexican immigrant counterparts who reported “wanting to migrate.” The main effects of unplanned migration were significantly related to greater odds of fair or poor physical health status for Latina women respondents overall, with no significant differences by subgroup. Additionally, there were no significant findings for the “other Latino” subgroup in the analysis of interaction effects, which may be due to the inclusion of multiple ethno-national origins within this categorization, which can obscure specific trends. Supplementary analyses (not shown) suggested that for Cubans and the other Latino subgroup, reporting having to migrate was associated with also reporting that migration was motivated by political reasons generally and direct political persecution in particular, although political and economic motivations for migration likely intersected for these 2 groups. Despite such variation, it may be that reporting having to migrate is generally indicative of a lack of perceived personal control over migration decision-making, which may contribute to past and current levels of stress and in turn influence outcomes of psychological distress and self-assessed physical well-being for other Latino subgroups, including island-born Puerto Ricans.

We additionally show that stressors related to living as a Latino immigrant in the United States are significantly associated with higher levels of psychological distress, but not to self-assessed physical health. It may be that for this relatively young sample, current stressors related to immigration status have too distal a relationship with physical health (as opposed to psychological health) to have a significant current effect. It is also possible that the cumulative effect of immigration-related stressors over time will have an influence on physical health later in life,[51,52] but these long-term effects could not be assessed in the present analysis. Ancillary analyses revealed significant differences in the level of immigration stress by Latino subgroup, but the effect of immigration stress on psychological distress did not vary by subgroup when we tested interaction terms (data not shown).

In our analyses of men and women in different Latino subgroups, we were somewhat limited in examining specific patterns of migration circumstances and health, as opposed to interaction effects, given the insufficient sample sizes. However, given the significant findings in this analysis, we suggest that future studies of immigrant health include a range of measures related to pre- and postmigration circumstances; simply measuring nativity and place of origin does not capture the range of experiences that migrants have before arrival and that may continue to influence their health across the life course.

Overall, the findings related to migration decision-making and migration planning contribute to a topic that has been underexplored in the literature on immigrant health: the importance of premigration circumstances for immigrant health in the long term.[9] Several studies of the mental health of diverse immigrant communities have examined the persistent effects of premigration exposure to political violence[14,53,54] and of unplanned migration on health.[18,19, 55] However, we have extended this analysis to a representative national sample of Latino immigrants who reported experiences of premigration adversity, which might include political violence exposure, but also conditions of economic or social hardship.

We additionally observed that significant relationships between migration circumstance measures and health outcomes remained even when we controlled for common measures of acculturation, which are often the predominant focus of Latino immigrant health studies. Mixed findings for these variables, although limited due to their crude approximation of acculturation, suggest the inadequacy of a sole focus on cultural factors in Latino immigrant health studies.[8] For example, we observed no association between time in the United States and either health outcome. Although years in the United States are generally thought of as related to declining immigrant health, this relationship has been found to vary significantly by health outcome and respondent characteristics.[56, 57]

Nevertheless, we identified some significant findings for acculturation-related measures, including a positive association between family cultural conflict and psychological distress, a result consistent with other analyses.[7] Additionally, limited English-language proficiency was significantly associated with greater odds of fair or poor physical health status for men. This relationship between English-language proficiency and poorer self-assessed physical health runs contrary to the decline in health status with greater individual acculturation found in other studies.[1] It is possible that a better command of English positively influences physical health by facilitating access to health care or better occupational opportunities,

measures we did not control for in our model. Although we acknowledge the imperfect nature of these acculturation proxy measures, the overall results suggest that acculturation continues to be an important consideration in assessing health outcomes for Latino immigrants,[58] but should not be included at the expense of determinants of health related to social and structural adversities that Latino migrants encounter in places of origin and in the United States.

Study Limitations

There are several limitations to this analysis. First, the NLAAS data set is cross-sectional, prohibiting us from concluding a causal pathway between premigration circumstances, immigration-related stressors, and health outcomes. Premigration circumstance measures are subject to recall bias and may be influenced by current states of psychological distress or physical well-being. The circumstances of migration decision-making, transit from country of origin, and the conditions upon entry to the United States are each likely to play a role in long-term health outcomes—either directly or indirectly through other, ongoing immigration-related stressors.

Second, because the NLAAS data were collected nearly a decade ago, findings should be interpreted in light of their historical context. At the time of the survey, the United States was already carrying out heightened surveillance of immigrants after September 11, 2001. More recently, there have been increases in workplace and residential raids[59] as well as efforts to enact increasingly punitive immigration policies at the state and local levels that target Latinos and may contribute to greater immigration-related stress. Our analysis suggests that being questioned about legal status was already widespread for this national sample of Latino immigrants in 2002 and 2003. The changing legal context for immigrants and their families points to the need to continue efforts to collect timely and detailed data on the circumstances of migration, reception context, and health.

Implications for Public Health Research and Advocacy

Global migration flows are strongly shaped by conditions of economic inequality, political conflict, and global climate change—conditions that may pressure individuals to migrate even if they prefer to remain.[60] Our findings point to the potentially detrimental health impacts of having to migrate and unplanned migration, which vary by gender and Latino subgroup.

In addition, our descriptive findings related to immigration stressors have important implications for current health policy and practice. We found that as many as 12% of Latinos in this national sample avoided health services through fear of deportation; 18% of Latino men reported fear of deportation if visiting a social or government agency. We show that, aside from the potentially detrimental influence this poses for chronic and infectious disease prevention and treatment, there is a significant association between these and other immigration-related stressors and psychological distress.[61, 62] These results might be seen in light of other structural factors influencing the health and health care of immigrants living in the United States. For example, undocumented and newly arrived legal permanent residents face significant barriers to health care[63] and will continue to be excluded from access to

most publicly funded health care coverage under the Affordable Care Act.[64] The continued exclusion of undocumented and recently arrived immigrants from public health programs is likely also to have a chilling effect on the use of health services among Latino immigrants generally, potentially increasing levels of immigration-related stress and adversely affecting health outcomes.

Overall, our results point to the importance of considering social and structural inequalities experienced by immigrants in the United States, factors that have been overlooked by acculturation-based and US-focused models. In some cases, acculturation-based studies have focused their policy recommendations on efforts to provide English-language training to immigrants in the United States, or other individually focused interventions.[8–10] Alternatively, we suggest that public health researchers and advocates must also focus their attention on a critical appraisal of the social, political, and economic climate in both place-of-origin and receiving contexts, and its potential impact on the health of Latino immigrants to the United States and the communities they live in.

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TABLE 1

Sociodemographic Characteristics, Migration Circumstances, and Psychological Distress for a National Sample of Foreign-Born Latinos: National Latino and Asian American Study, 2002–2003

Variable	Women (n|=|891), Unweighted No. (Weighted %) or Mean ± SD	Men (n|=|711), Unweighted No. (Weighted %) or Mean ± SD
Sociodemographic Characteristics		
Age, y	40.03 ± 0.73	37.85 ± 0.76
Married or cohabitating**	553 (65.0)	511 (74.6)
Less than high school education (<|12 y)	413 (55.0)	312 (54.4)
Did not have enough money to meet basic needs*	440 (48.0)	299 (40.6)
Not a US citizen	473 (65.0)	403 (66.5)
Latino subgroup*		
Mexican	252 (51.5)	223 (58.0)
Cuban	261 (6.8)	235 (6.9)
Other Latino	266 (34.3)	155 (27.0)
Puerto Rican	112 (7.3)	98 (8.0)
Individual and Family Acculturation Measures		
Poor or fair self-rated English proficiency**	653 (76.7)	471 (71.7)
>|10 y in the US	621 (68.1)	489 (67.4)
Family cultural conflict (0–10)*	1.43 ± 0.1	1.02 ± 0.1
Migration Circumstances		
Had to migrate	350 (32.4)	293 (31.0)
Unplanned migration	369 (46.0)	289 (43.1)
Immigration-related stressor		
Felt guilty about leaving family and friends	151 (18.0)	108 (14.7)
Did not receive same respect in US as in country of origin	271 (31.6)	201 (29.7)
Limited contact with family and friends	407 (45.9)	354 (50.9)
Hard to interact because of limited English***	426 (51.9)	257 (37.4)
Treated badly because of poor or accented English	190 (23.9)	135 (22.0)
Difficult to find work because of Latino descent	232 (30.4)	170 (28.9)
Questioned about legal status*	194 (27.4)	194 (34.1)
Feared deportation if visited a social or government agency	76 (14.1)	75 (18.4)
Avoided health service because of INS	51 (9.8)	45 (11.9)
Immigration-related stress scale (0–9)	2.53 ± 0.1	2.48 ± 0.1
Health Outcomes		
Psychological distress (Kessler 10 score)***	14.80 ± 0.3	12.72 ± 0.3
Fair or poor self-rated physical health***	302 (35.4)	168 (26.9)

Note. INS|=|Immigration and Naturalization Service, the US federal agency responsible for immigrant naturalization, detention, and deportation at the time of the study.

Source. Collaborative Psychiatric Epidemiologic Surveys, 2002/2003.[42]

*$P|<|.05$;

**$P|<|.01$;

***$P|<|.001$ for differences between women and men.

TABLE 2

Bivariate and Multivariate Linear Regression Analyses of Psychological Distress (Kessler 10 Score) Among Latino Immigrants in the United States: National Latino and Asian American Study, 2002–2003

Variable	Women (n|=|891)				Men (n|=|711)			
	Model 1 (Bivariate), b (SE)	Model 2 (Multivariate), b (SE)	Model 3 (Multivariate), b (SE)	Model 4 (Multivariate), b (SE)	Model 1 (Bivariate), b (SE)	Model 2 (Multivariate), b (SE)	Model 3 (Multivariate), b (SE)	Model 4 (Multivariate), b (SE)
Sociodemographics								
Age ×10, y	0.38* (0.02)	0.03 (0.02)	0.08 (0.02)	0.07 (0.02)	0.08 (0.02)	0.01 (0.02)	0.04 (0.02)	0.04 (0.02)
Married or cohabitating	−1.13 (0.62)	−0.23 (0.50)	−0.26 (0.51)	−0.18 (0.52)	−1.53 (0.90)	−0.93 (0.77)	−1.03 (0.76)	−1.03 (0.76)
Less than high school education	1.00 (0.55)	0.68 (0.44)	0.71 (0.41)	0.73 (0.40)	−0.02 (0.47)	0.34 (0.54)	0.25 (0.54)	0.22 (0.53)
Not enough money to meet basic needs	3.01*** (0.55)	2.33*** (0.52)	2.11*** (0.55)	2.13*** (0.54)	0.35 (0.46)	0.1 (0.58)	−0.03 (0.50)	−0.01 (0.49)
Not a US citizen	−0.64 (0.69)	−0.3 (0.64)	−0.58 (0.69)	−0.52 (0.69)	−1.29 (0.42)**	−0.88 (0.58)	−1.02 (0.64)	−1.07 (0.65)
Latino subgroup (reference|=|Mexican)								
Cuban	1.67** (0.60)	2.13** (0.69)	2.34** (0.76)	1.01 (0.69)	0.94* (0.37)	0.94* (0.46)	0.81* (0.38)	0.89 (0.72)
Other Latino	1.04 (0.54)	1.39* (0.65)	1.51* (0.62)	1.43* (0.66)	0.55 (0.48)	0.58 (0.57)	0.54 (0.52)	0.5 (0.48)
Puerto Rican	2.23* (0.87)	2.09* (0.98)	2.3* (1.00)	1.34 (1.37)	3.41*** (0.71)	2.81** (0.78)	2.86** (0.78)	3.11** (1.16)
Individual and Family Acculturation								
Fair or poor English proficiency	0.78 (0.60)	1.02 (0.52)	0.16 (0.49)	0.14 (0.49)	0.25 (0.65)	1.16 (0.71)	0.79 (0.65)	0.82 (0.65)
>|10 y in the US	0.69 (0.37)	0.54 (0.55)	1.02 (0.57)	1.01 (0.56)	−0.03 (0.46)	0.08 (0.62)	0.26 (0.64)	0.24 (0.66)
Family cultural conflict (0–10)	0.86*** (0.14)	0.84*** (0.13)	0.69*** (0.14)	0.69*** (0.13)	0.9*** (0.17)	0.85*** (0.17)	0.81*** (0.18)	0.81*** (0.18)
Migration Circumstances, Main Effects								

Variable	Women (n|=|891)				Men (n|=|711)			
	Model 1 (Bivariate), b (SE)	**Model 2 (Multivariate), b (SE)**	**Model 3 (Multivariate), b (SE)**	**Model 4 (Multivariate), b (SE)**	**Model 1 (Bivariate), b (SE)**	**Model 2 (Multivariate), b (SE)**	**Model 3 (Multivariate), b (SE)**	**Model 4 (Multivariate), b (SE)**
Had to migrate	1.73*** (0.44)		0.56 (0.37)	−0.16 (0.48)	1.09 (0.74)		0.53 (0.69)	0.28 (0.85)
Unplanned migration	1.35* (0.62)		1.01 (0.67)	1.06 (0.74)	0.22 (0.50)		0.14 (0.44)	0.28 (0.51)
Immigration-related stress scale (0–9)	0.56*** (0.15)		0.56** (0.15)	0.56** (0.15)	0.29* (0.13)		0.33** (0.11)	0.33** (0.11)
Migration Circumstances, Interactions								
Latino subgroup, had to migrate								
Cuban, had to migrate				1.92* (0.91)				−0.51 (1.22)
Other Latino, had to migrate				0.81 (1.26)				0.86 (0.88)
Puerto Rican, had to migrate				4.6** (1.48)				0.46 (1.86)
Latino subgroup, unplanned migration								
Cuban, unplanned				1.25 (1.05)				0.88 (0.86)
Other Latino, unplanned				−0.29 (1.20)				−0.57 (0.84)
Puerto Rican, unplanned				0.15 (1.66)				−1.13 (1.27)
Constant		10.41***	8.94***	9.01***		11.52	10.85	10.87***
R^2		0.12	0.15	0.15		0.14	0.17	0.17
Adjusted Wald statistic		9.88***	9.85***	7.18***		16.51***	15.51***	13.21***

Note. Model 1 presents bivariate regressions of psychological distress on each covariate separately. Model 2 is a multivariate regression of psychological distress on all socio-demographic and acculturation variables. Model 3 adds measures of migration circumstances and Model 4 adds interaction terms between Latino subgroup and two migration circumstance measures.

Source. Collaborative Psychiatric Epidemiologic Surveys, 2002/2003[42].

*$P|<|.05$;

**$P|<|.01$;

***$P<.001$.

TABLE 3

Bivariate and Multivariate Logistic Regression Analyses of Fair or Poor Physical Health Status Among Latino Immigrants in the United States: National Latino and Asian American Study, 2002–2003

	Women (n|=|891)				Men (n|=|711)			
	Model 1 (Bivariate), OR (95% CI)	**Model 2 (Multivariate), OR (95% CI)**	**Model 3 (Multivariate), OR (95% CI)**	**Model 4 (Multivariate), OR (95% CI)**	**Model 1 (Bivariate), OR (95% CI)**	**Model 2 (Multivariate), OR (95% CI)**	**Model 3 (Multivariate), OR (95% CI)**	**Model 4 (Multivariate), OR (95% CI)**
Sociodemographic Characteristics								
Age, y	1.05 (1.04, 1.06)	1.05 (1.03, 1.07)	1.05 (1.03, 1.07)	1.05 (1.03, 1.07)	1.01 (1.00, 1.03)	1.02 (1.00, 1.04)	1.02 (1.00, 1.04)	1.02 (1.00, 1.04)
Married or cohabitating	0.71 (0.50, 1.01)	1.02 (0.68, 1.53)	1.05 (0.70, 1.58)	1.07 (0.72, 1.60)	1.48 (0.97, 2.24)	1.18 (0.73, 1.93)	1.21 (0.75, 1.94)	1.23 (0.75, 2.00)
Less than high school education	3.77 (2.25, 6.32)	2.27 (1.30, 3.97)	2.35 (1.40, 3.95)	2.37 (1.41, 3.99)	2.47 (1.36, 4.51)	1.17 (0.60, 2.27)	1.21 (0.61, 2.41)	1.19 (0.59, 2.38)
Not enough money to meet basic needs	2.71 (1.92, 3.81)	2.11 (1.37, 3.25)	2.02 (1.31, 3.11)	2.02 (1.31, 3.12)	1.72 (1.12, 2.64)	1.43 (0.86, 2.37)	1.38 (0.83, 2.29)	1.42 (0.85, 2.38)
Not a US citizen	0.98 (0.67, 1.45)	1.27 (0.71, 2.27)	1.19 (0.65, 2.19)	1.19 (0.64, 2.20)	1.17 (0.75, 1.84)	0.78 (0.41, 1.49)	0.75 (0.38, 1.47)	0.70 (0.36, 1.37)
Latino subgroup (reference|=|Mexican)								
Cuban	0.76 (0.49, 1.18)	0.49 (0.25, 0.93)	0.48 (0.23, 1.01)	0.53 (0.18, 1.59)	0.36 (0.22, 0.58)	0.28 (0.15, 0.54)	0.27 (0.13, 0.55)	0.27 (0.10, 0.78)
Other Latino	0.76 (0.46, 1.24)	0.75 (0.43, 1.31)	0.75 (0.42, 1.32)	0.75 (0.32, 1.76)	0.25 (0.15, 0.42)	0.29 (0.16, 0.52)	0.30 (0.17, 0.54)	0.27 (0.11, 0.71)
Puerto Rican	1.28 (0.65, 2.55)	1.28 (0.53, 3.08)	1.31 (0.52, 3.29)	1.53 (0.51, 4.55)	0.93 (0.58, 1.50)	1.10 (0.55, 2.21)	1.14 (0.57, 2.27)	1.17 (0.59, 2.30)
Individual and Family Acculturation								
Fair or poor English proficiency	3.57 (2.38, 5.36)	1.75 (0.98, 3.14)	1.48 (0.86, 2.54)	1.49 (0.86, 2.59)	6.33 (3.60, 11.1)	5.01 (2.15, 11.7)	4.78 (1.92, 11.9)	4.98 (2.01, 12.3)
>|10 y in the US	1.52 (0.98, 2.37)	1.16 (0.66, 2.02)	1.21 (0.67, 2.18)	1.20 (0.66, 2.19)	0.91 (0.61, 1.35)	0.79 (0.48, 1.28)	0.75 (0.47, 1.18)	0.72 (0.44, 1.16)
Family cultural conflict (0–10)	1.02 (0.92, 1.13)	1.03 (0.91, 1.15)	0.99 (0.89, 1.11)	0.99 (0.88, 1.11)	1.07 (0.92, 1.24)	1.14 (0.96, 1.36)	1.13 (0.95, 1.35)	1.14 (0.95, 1.36)
Migration Circumstances, Main Effects								
Had to migrate	1.53 (0.96, 2.46)		1.39 (0.86, 2.27)	1.32 (0.66, 2.65)	1.11 (0.76, 1.62)		1.16 (0.74, 1.82)	0.88 (0.52, 1.49)

	Women (n|=|891)				Men (n|=|711)			
	Model 1 (Bivariate), OR (95% CI)	**Model 2 (Multivariate), OR (95% CI)**	**Model 3 (Multivariate), OR (95% CI)**	**Model 4 (Multivariate), OR (95% CI)**	**Model 1 (Bivariate), OR (95% CI)**	**Model 2 (Multivariate), OR (95% CI)**	**Model 3 (Multivariate), OR (95% CI)**	**Model 4 (Multivariate), OR (95% CI)**
Unplanned migration	1.79 (1.19, 2.69)		1.61 (1.01, 2.59)	1.70 (0.86, 3.35)	1.62 (1.05, 2.50)		1.54 (0.97, 2.45)	1.78 (1.04, 3.07)
Immigration-related stressors (0–9)	1.07 (0.94, 1.21)		1.07 (0.94, 1.22)	1.07 (0.94, 1.22)	1.12 (0.98, 1.26)		1.01 (0.89, 1.15)	1.03 (0.90, 1.17)
Migration Circumstances, Interactions								
Latino subgroup, had to migrate								
Cuban, had to migrate				0.86 (0.30, 2.46)				1.33 (0.40, 4.39)
Other Latino, had to migrate				1.11 (0.34, 3.62)				1.88 (0.70, 5.04)
Puerto Rican, had to migrate				1.53 (0.43, 5.40)				4.49 (1.53, 13.2)
Latino Subgroup, unplanned migration								
Cuban, unplanned				1.13 (0.45, 2.84)				0.88 (0.35, 2.21)
Other Latino, unplanned				0.94 (0.35, 2.54)				0.77 (0.21, 2.89)
Puerto Rican, unplanned				0.60 (0.94, 1.22)				0.24 (0.09, 11.08)
Adjusted Wald statistic		7.54***	7.17***	5.64***		8.58***	7.13***	6.22***

Note. Model 1 presents the odds ratios for bivariate logistic regressions of self-rated physical health on each covariate separately. Model 2 is a multivariate logistic regression of self-rated physical health on all socio-demographic and acculturation variables. Model 3 adds measures of migration circumstances and Model 4 adds interaction terms between Latino subgroup and two migration circumstance measures.

Source. Collaborative Psychiatric Epidemiologic Surveys, 2002/2003[42].

***$P|<|.001$.